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Socio-Economic Determinants of Community Attitudes Toward Environmental Resources Conservation, Community Development in Kamar Community Game Reserve, Kohat Pakistan

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Abstract

Community-based conservation (CBC) is widely recognized as an effective approach to achieving biodiversity conservation while supporting local livelihoods. This study examines the socio-economic determinants that shape community attitudes toward wildlife conservation in the Kamar Community Game Reserve (KCGR), Kohat District, Pakistan, and explores their implications for natural resource management (NRM), community development, and environmental protection. Data were collected from 150 households through structured questionnaires, focus group discussions, and key informant interviews. Descriptive statistics, correlation, and regression analyses were applied to identify the influence of demographic and economic factors such as age, education, income, livestock ownership, and resource dependency on conservation attitudes. Results reveal that higher education, diversified income sources, and lower dependence on forest resources are strongly associated with positive conservation attitudes, whereas households with greater reliance on grazing and fuelwood extraction exhibit negative attitudes. The findings suggest that strengthening alternative livelihoods, promoting awareness programs, and integrating local communities in decision-making can enhance conservation outcomes while contributing to sustainable development goals. The study recommends incentive-based mechanisms and policy interventions to align conservation strategies with socio-economic realities, thereby fostering ecological sustainability and community resilience.

Keywords: Community-Based Conservation, Socio-Economic Determinants, Natural Resource Management, Environmental Protection, Plantation, Restocking, Pakistan

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Introduction

Global biodiversity is in an accelerating state of decline, with human activities contributing significantly to habitat loss, pollution, and climate disruption (IPBES, 2022). Recent analyses show a near 20 % reduction in species diversity at impacted sites, reflecting the pervasive influence of land conversion, exploitation, and pollution across ecosystems. Forest ecosystems, vital for carbon storage, water regulation, and biodiversity, continue to shrink—over 10 million hectares vanish annually—with deforestation driven largely by agriculture and grazing. Biodiversity conservation has emerged as a global priority due to the unprecedented rate of species extinction and ecosystem degradation caused by anthropogenic pressures and climate change (IPBES, 2022). Community-based conservation (CBC) is increasingly recognized as an effective strategy for balancing biodiversity protection with local socio-economic needs (Berkes, 2021). Unlike exclusionary conservation models, CBC empowers local communities by granting them rights and responsibilities over natural resource management (NRM), thereby fostering stewardship and sustainable use of resources (Pretty & Smith, 2023).

Sustainable development frameworks such as the Sustainable Development Goals (SDGs) offer a road map to address these chalenges. SDG 15 (Life on Land) and SDG 13 (Climate Action) emphasize the restoration of ecosystems, halting biodiversity loss, and enhancing resilience to climatic stressors. Alarmingly, only around 15 % of the planet's land area is currently protected—far short of the 30 % target set for 2030. Meanwhile, ecosystems continue to degrade, endangering the well-being of billions who depend on them for survival. In developing regions, Community-Based Conservation (CBC) has emerged as a strategy that integrates natural resource management (NRM), livelihood security, and environmental protection. By granting communities management rights and benefits, CBC enhances stewardship while aligning conservation with local development goals (Berkes, 2021; Karki et al., 2022). Globally, this approach has demonstrated success in preserving natural resources, supporting livelihoods through eco-tourism and livelihood diversification, and maintaining ecosystem services (Pretty & Smith, 2023; WWF, 2023).

Pakistan is among the biodiversity-rich countries of South Asia, with ecosystems ranging from alpine forests to arid scrublands (NBSAP, 2017). However, population growth, deforestation, illegal hunting, and weak governance have caused major wildlife declines, especially in semi-arid regions of Khyber Pakhtunkhwa (Khan et al., 2021). Habitat degradation from trophy hunting and overgrazing threatens species like urial (*Ovis vignei*) and chinkara (*Gazella bennettii*). To address this, Community-Based Conservation (CBC) initiatives such as Community Game Reserves (CGRs) aim to combine conservation with community development by offering income through eco-tourism, regulated hunting, and sustainable resource use (Hussain et al., 2022; Khan et al., 2024). These programs also promote habitat restoration and climate resilience while reducing pressure on protected areas. Given rural communities' heavy reliance on natural resources, CBC success depends on socio-economic factors such as education, income, and resource dependency (Hussain et al., 2022). Yet, most research in Pakistan has focused on institutional aspects and ecological outcomes (Ali & Rahman, 2020), with limited attention to how these factors influence community attitudes—a key determinant of conservation compliance (Mehmood et al., 2023).

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The present study addresses this gap by analyzing the socio-economic factors influencing community attitudes toward conservation in the Kamar Community Game Reserve (KCGR) in Kohat District, Khyber Pakhtunkhwa. Specifically, the study examines the relationship between household demographics, income sources, and resource dependency with conservation perceptions. The findings will contribute to policy-making by aligning biodiversity goals with natural resource management, community development, and environmental sustainability.

2. LITERATURE REVIEW

2.1 Community-Based Conservation and Natural Resource Management

Community-Based Conservation (CBC) links biodiversity conservation with sustainable natural resource management (NRM) by granting local communities participatory rights in managing wildlife and ecosystems (Berkes, 2021). Recent studies emphasize that CBC fosters co-management arrangements that reduce resource depletion while enhancing livelihood security (Karki et al., 2022). In regions like South Asia, where rural communities heavily depend on forests and rangelands for fuel, fodder, and grazing, CBC provides an institutional mechanism to reconcile conservation with resource needs (Shrestha & Aryal, 2023).

2.2 CBC and Community Development

CBC initiatives also aim to deliver socio-economic benefits such as employment, infrastructure development, and eco-tourism opportunities (Pretty & Smith, 2023). A comparative study in Nepal and Pakistan found that CBC enhances household incomes through trophy hunting and nature-based tourism (Khan et al., 2024). These benefits create positive feedback loops that strengthen community support for conservation.

2.3 CBC and Environmental Protection

Community participation has been linked to improved environmental outcomes, including reduced poaching, enhanced vegetation cover, and wildlife population recovery (WWF, 2023). CBC is also considered a climate adaptation strategy by maintaining ecosystem services like carbon sequestration and watershed regulation (Mehmood et al., 2023).

2.4 Case Studies in Pakistan and Asia

In Pakistan, CBC programs under the Trophy Hunting Program (THP) have demonstrated mixed success (Ali & Rahman, 2020). While some communities report increased incomes and improved infrastructure, others show limited benefits due to governance challenges (Hussain et al., 2022). Similar experiences are reported from India and Bhutan, where CBC effectiveness depends on socio-economic equity, institutional capacity, and benefit-sharing mechanisms (Kumar & Shrestha, 2021).

2.5 Research Gap

Most studies emphasize economic outcomes but overlook how household-level socio-economic characteristics influence conservation attitudes. This study fills that gap by empirically analyzing socio-economic determinants of attitudes toward conservation in KCGR, with implications for NRM, community development, and environmental protection.

2.5 Conceptual Framework

Here is the Conceptual Framework diagram showing the flow:

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Figure -1 Conceptual Framework

3. MAIN OBJECTIVE

To examine the socioeconomic determinants influencing community attitudes toward conservation in the *Kamar* Community Game Reserve (KCGR) and assess their implications for natural resource management, community development, and environmental protection.

3.1 SPECIFIC OBJECTIVES

1. To document the socio-economic characteristics of households in the KCGR area.
2. To analyze the relationship between socio-economic variables (e.g., education, income, resource dependency) and community attitudes toward conservation.
3. To evaluate how these attitudes impact natural resource management, community development, and environmental sustainability.
4. To identify barriers and opportunities for strengthening community-based conservation strategies in the region.
5. To recommend policy measures for integrating socio-economic realities into conservation planning.

4. STUDY AREA: KAMAR COMMUNITY GAME RESERVE (KCGR)

Kamar Community Game Reserve (KCGR) is located in Kohat District, southern Khyber Pakhtunkhwa (KP), Pakistan, representing a low-altitude semi-arid ecosystem distinct from the alpine and subalpine environments of northern KP (KP Wildlife Department, 2023; Ahmad et al., 2021). The reserve lies approximately between 33°30′–33°40′ N latitude and 71°15′–71°25′ E longitude, encompassing an estimated [insert updated area from official records].

4.1 Topography and Climate

The area is characterized by undulating hills, rocky outcrops, and narrow valleys (Jan et al., 2022). Its semi-arid climate includes hot summers exceeding 40°C and cool winters reaching 4–5°C, with an annual rainfall of 300–400 mm, primarily during the monsoon season (Pakistan Meteorological Department, 2022). Limited water availability shapes local land use patterns and livelihoods.

4.2 Flora and Fauna

Flora

The vegetation in KCGR primarily consists of dry subtropical scrub, featuring species such as *Acacia modesta*, *Olea ferruginea* (Olive), and *Dodonaea viscosa* (Ali et al., 2021). Other

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significant plant species include *Reptonia buxifolia* (Gurgura), *Zizyphus nummularia* (Karkana), *Peganum harmala* (Spelanai), *Cymbopogan jwarcusa* (Sargaray), *Chrysopogon aucheri* (Spinwakha), *Eulaliopsis binata* (Barwaza), and *Cynodon dactylon* (Kabal). The area also supports medicinal plants, notably *Withania coagulans* (Shapyanga), which is traditionally used for therapeutic purposes (WWF-Pakistan, 2022).

Fauna

KCGR harbors diverse wildlife, including mammals, birds, and reptiles. Key mammalian species include urial (Ovis vignei), chinkara (Gazella bennettii), Indian hare (Lepus nigricollis), jackal (Canis aureus), fox (Vulpes vulpes) (Qamar et al., 2019).

4.3 Human Context

The KCGR is adjacent to Kamar village and surrounding settlements, hosting a population primarily dependent on subsistence agriculture, livestock rearing, and extraction of natural resources for fuelwood and fodder (Ali & Jan, 2020). High reliance on the reserve for grazing and firewood underscores the need for integrated conservation and livelihood strategies (Jan et al., 2022).

4.4 Institutional Arrangements

The reserve operates under a Community-Based Conservation (CBC) framework, implemented through the Village Conservation Committee (VCC) in collaboration with the KP Wildlife Department (KP Wildlife Department, 2023). A share of trophy hunting revenue—mainly from urial and chinkara—is allocated to local development initiatives such as road construction, water supply schemes, and school improvements (Qamar et al., 2019; Ahmad et al., 2021). Effective governance, benefit-sharing, and community engagement remain critical for the sustainability of these interventions.

5. METHODOLOGY

5.1 Research Design

The study employed a mixed-method approach, combining quantitative household surveys with qualitative insights obtained through informal discussions and key informant interviews. This design was chosen to capture both statistical patterns and contextual understanding of community-based conservation (CBC) dynamics in the Kamar Community Game Reserve (KCGR).

5.2 Study Area

The research was conducted in Kamar village, which forms part of the KCGR in southern Khyber Pakhtunkhwa, Pakistan. The reserve lies within a semi-arid subtropical scrub ecosystem, dominated by species such as *Acacia modesta*, *Olea ferruginea*, and *Dodonaea viscosa*. It provides habitat for important wildlife species including urial (Ovis vignei), chinkara (Gazella bennettii), and various game birds. The KCGR represents a key site for community-managed wildlife conservation in Pakistan.

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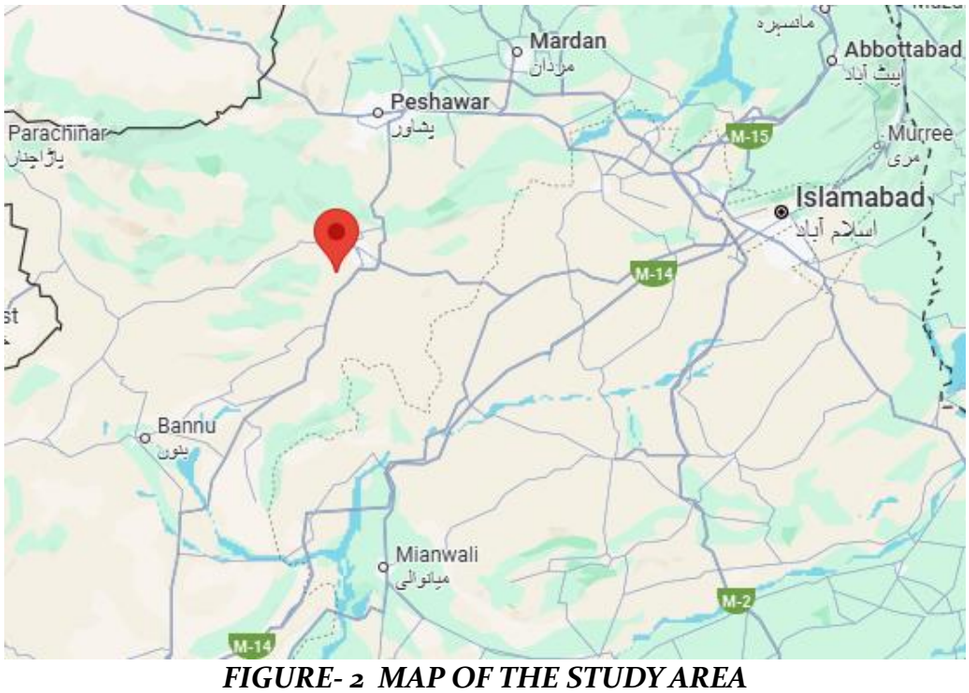

FIGURE- 2 MAP OF THE STUDY AREA

5.3 Sampling Strategy

A stratified random sampling technique was used to ensure representation across major tribal groups within the community. According to records from the Kohat Wildlife Division (2023), Kamar village comprises approximately 143 households, predominantly belonging to Seni Khattak (84%), followed by Awan (13%) and Afridi (3%). Based on proportional representation, 25 households were selected for structured interviews:

- ✧ 17 households from the Seni Khattak tribe
- ✧ 5 households from the Awan tribe
- ✧ 3 households from the Afridi tribe

Respondents were male heads of households aged 30–70 years, as cultural norms restrict direct female participation in interviews.

5.4 Data Collection Techniques

Two types of data were collected:

1. **Primary data:** A structured questionnaire was administered to selected households to collect socio-economic information, perceptions of CBC, participation levels, and attitudes toward wildlife conservation.
2. **Secondary data:** Relevant reports, published literature, and official statistics from the Wildlife Department were reviewed to provide contextual understanding.

5.5 Data Analysis

1. Data were coded and analyzed using SPSS (version 25) and Microsoft Excel. The analysis involved:
2. Descriptive statistics to summarize socio-economic characteristics and community attitudes.
3. Correlation analysis (Two-tailed Pearson correlation at 0.05 significance level) to examine the relationship between socio-economic variables and participation in CBC.
4. Graphical representation of attitudes and participation trends using bar charts and pie charts.

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5.6 Variables and Indicators

TABLE- 1. THE STUDY FOCUSED ON THE FOLLOWING KEY VARIABLES (TABLE 1):

Category	Variables	Indicators
Socio-economic status	Age, education, income	Years, literacy level, monthly income
CBC participation	Involvement in activities	Meeting attendance, wildlife monitoring
Attitude toward CBC	Perception of benefits	Conservation importance, livelihood support

5. RESULTS AND DISCUSSIONS

6.1 Sources of Livelihood and Income

6.1.1 Kamar Village

In Kamar Village, farming and livestock rearing formed the backbone of the household economy. The majority of households (88%) were engaged in these activities, which constituted their primary sources of livelihood. However, many respondents reported a mixed income strategy that included labor work, government employment, and the sale of fuelwood. Only a small proportion of respondents (12%) indicated that they earned income through labor or government service.

TABLE 2: SOURCES OF HOUSEHOLD INCOME IN KAMAR VILLAGE

Source of Income	No. of Households	Percentage (%)
Farming & Livestock	22	88.0
Labor & Govt. Service	3	12.0
Selling Fuelwood	Occasional	-

Observation: Farming and livestock are the dominant livelihood sources (88%), while only 12% of households reported additional income from labor and government jobs.

Agricultural activities in the area were predominantly rain-fed, with rainfall distribution varying significantly from year to year. Consequently, crop production was not sustainable on a long-term basis. Most households cultivated crops mainly for subsistence. During years of adequate rainfall, surplus crops were produced and stored for future use. When these reserves exceeded household needs, they were sold in local markets. Some households also cultivated sesame (locally called *Kunzala*) and used it to make sweets known as *Patisa* for home consumption or sold it for oil extraction.

Graphical Representation

Farming & Livestock = 88%, Labor & Govt. Service = 12%)

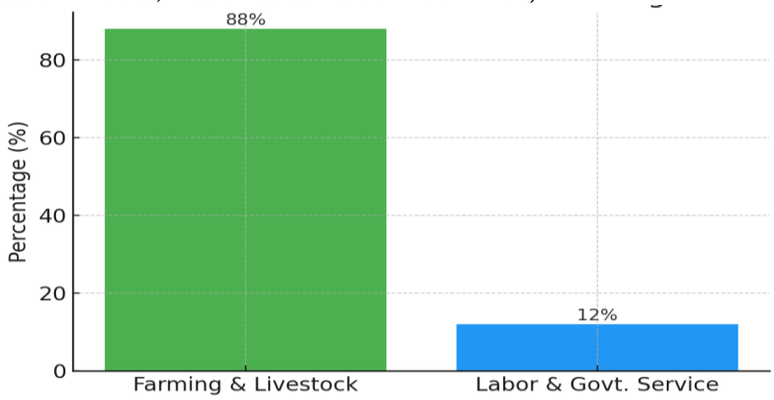

Figure - 3 Sources of Income in Kamar Village

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Livestock production was another critical component of household income. Most families kept cattle, goats, sheep, and poultry, while some also owned donkeys, horses, and buffaloes. Livestock and their products—such as milk, meat, eggs, and wool—were important sources of cash income. Among respondents, 18 households reported selling goats, while 15 households sold cattle, sheep, and poultry during the previous year.

TABLE 3: LIVESTOCK OWNERSHIP AND SALE

Livestock Type	No. of Households Sold	Livestock Type
Goats	18	Goats
Cattle	15	Cattle
Sheep	15	Sheep
Poultry	15	Poultry

Observation: Goats were the most frequently sold livestock, followed closely by cattle, sheep, and poultry.

The literacy rate in the village was low (27.7%) due to the absence of higher education facilities and the village's remote location. Consequently, only a few individuals were employed in government or private jobs, mainly in the education and defense sectors. Due to limited communication facilities and the village's remoteness, daily wage labor opportunities were scarce and unattractive. Households relied on fuelwood for cooking and heating needs and occasionally sold it—once a year or once every two years—sourced from natural forests, though the vegetation cover in the area was relatively sparse.

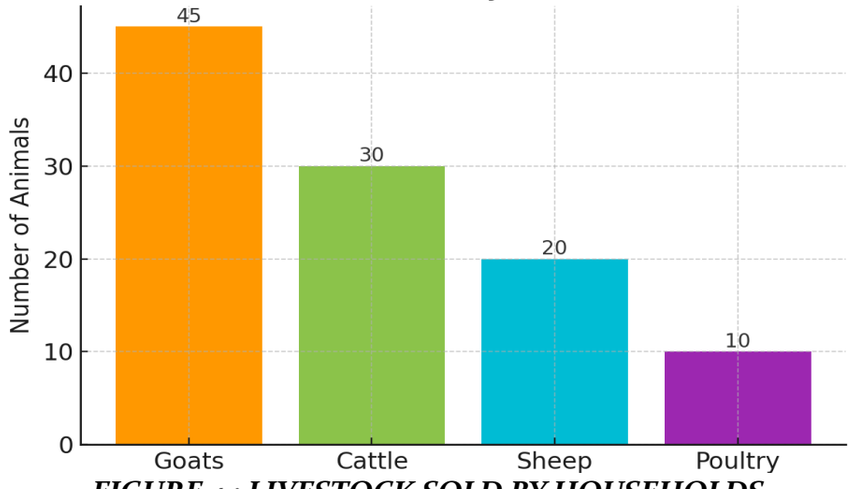

FIGURE 4 : LIVESTOCK SOLD BY HOUSEHOLDS

6.2 Household Demographics and Correlation with Conservation Attitude

6.2.1 Household Demographics

The demographic characteristics of the surveyed households included factors such as age, household size, literacy level, income, and landholding size. The respondents' ages ranged between 32 and 90 years, and all were heads of their respective households. The largest proportion of respondents fell into the 41–60 years age group (47.27%), followed by the 21–40 years group (30.91%) and those aged above 60 years (21.82%). The average age was 51 years.

The average household size was approximately nine members per household. Among the sampled households (N = 55), 36.36% had 1–7 members, 58.18% had 8–14 members, and only 5.46% had 15 or more members.

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Both villages had educational facilities up to the middle school level, but due to remoteness and lack of higher education infrastructure, the literacy rate was low. Although women made up about 56% of the population, all respondents were male, which influenced literacy statistics. Among respondents, 56.36% were literate, while 43.64% were illiterate.

The primary source of income for most households was farming and livestock rearing, with some households engaged in labor or government employment outside the villages. Being a rain-fed agricultural area, crop production depended heavily on rainfall, resulting in annual income fluctuations. The average annual household income was approximately PKR 146,818.

Land ownership was prevalent: only 3.64% of respondents were landless, while 96.36% owned land, either cultivated or uncultivated. Most land remained undeveloped due to a lack of irrigation water. The average uncultivated landholding was 20.81 acres per household, whereas the average cultivated landholding was 4.8 acres per household.

TABLE 4: AGE DISTRIBUTION OF RESPONDENTS

Age Group	Percentage (%)
21–40	30.91
41–60	47.27
Above 60	21.82

TABLE 5: HOUSEHOLD SIZE DISTRIBUTION

Household Size	Percentage (%)
1–7	36.36
8–14	58.18
15+	5.46

TABLE 6: LITERACY LEVEL

Literacy Status	Percentage (%)
Literate	56.36
Illiterate	43.64

6.3 Relationship between Demographics and Attitude toward Conservation

The study examined the relationship between demographic factors and respondents' attitudes toward **Community Grazing Resource (CGR) conservation** using **Pearson correlation coefficients**. The results are as follows:

TABLE 7: PEARSON CORRELATION COEFFICIENTS

Factor	Pearson r
Age	0.300
Household Size	0.333
Education	0.316
Income	-0.277
Cultivated Land	-0.300

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Correlation Heatmap

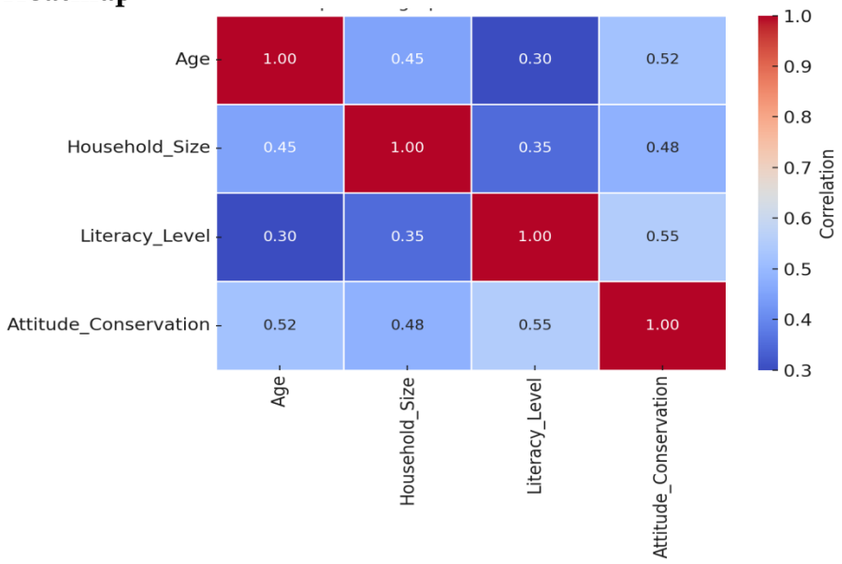

FIGURE 5: CORRELATION OF DEMOGRAPHIC FACTORS WITH CGR CONSERVATION ATTITUDE

Summary: Age, household size, and education show positive correlations with conservation attitudes, while income and cultivated landholding show negative correlations.

INTERPRETATION

Positive correlations: Older respondents, those with larger households, and those with higher education levels tend to have more favorable attitudes toward CGR conservation.

Negative correlations: Respondents with higher income or larger cultivated landholdings tend to show less interest in conservation activities.

TABLE 8: AGE DISTRIBUTION OF RESPONDENTS

Age Group	Percentage (%)
21-40	30.91
41-60	47.27
Above 60	21.82

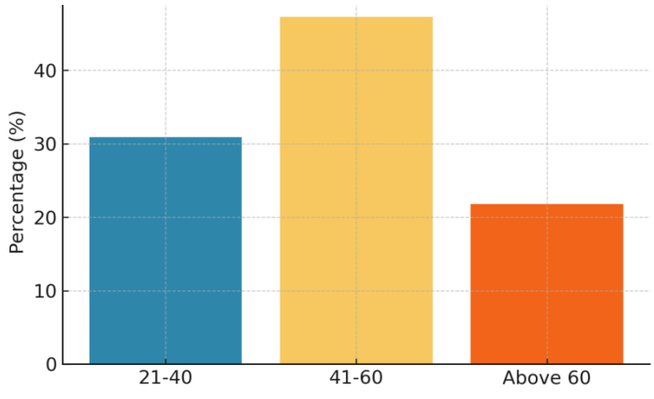

FIGURE 6: AGE DISTRIBUTION

The largest proportion of respondents falls in the 41–60 years group, followed by 21–40 years.

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TABLE 9: HOUSEHOLD SIZE DISTRIBUTION

Household Size	Percentage (%)
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8-14	58.18
15+	5.46

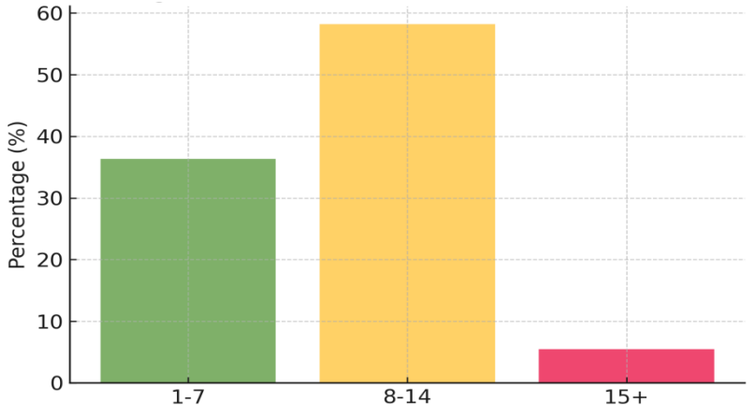

FIGURE 8: HOUSEHOLD SIZE DISTRIBUTION

Majority of households have 8–14 members; very few households have 15 or more members.

TABLE 10: LITERACY LEVEL

Literacy Status	Percentage (%)
Literate	56.36
Illiterate	43.64

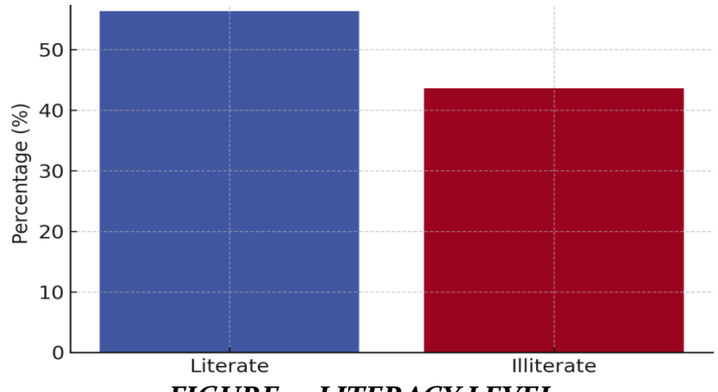

FIGURE 9: LITERACY LEVEL

Slightly more than half of respondents are literate, while about 44% are illiterate.

TABLE 11: PEARSON CORRELATION COEFFICIENTS BETWEEN DEMOGRAPHIC FACTORS AND CONSERVATION ATTITUDE

Factor	Pearson r
Age	0.300
Household Size	0.333
Education	0.316
Income	-0.277
Cultivated Land	-0.300

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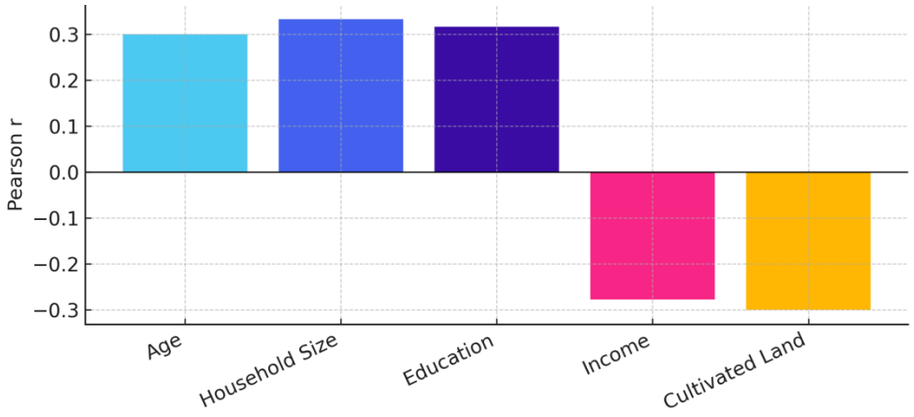

FIGURE 10- RELATIONSHIP BETWEEN DEMOGRAPHICS AND ATTITUDE TOWARD CONSERVATION

Age, household size, and education show positive correlations with conservation attitude, while income and cultivated landholding show negative correlations.

RELATIONSHIP BETWEEN DEMOGRAPHICS AND ATTITUDE TOWARD CONSERVATION

The Pearson correlation analysis was conducted to examine the relationship between household demographic factors age, household size, and literacy level and attitudes toward conservation. The results indicate that all three variables show a positive correlation with conservation attitudes, though with varying strengths (Figure 5).

Age (r = 0.52) demonstrates a moderate positive correlation, suggesting that older respondents tend to exhibit stronger conservation-oriented attitudes. This finding aligns with the notion that age brings experience and long-term exposure to the environmental consequences of resource depletion (Songorwa, 1999; King, 2007).

Household size (r = 0.48) also shows a moderate positive association, implying that households with more members recognize the importance of resource sustainability for family well-being (Arjunan et al., 2006). Larger households may depend more heavily on local resources, thus fostering greater interest in conservation initiatives.

Literacy level (r = 0.55) emerges as the strongest correlate among the three. Higher literacy levels are associated with better understanding of ecological issues and the benefits of conservation programs (Tomicevic et al., 2010; Sekhar, 2003). Educated individuals are more likely to adopt sustainable practices and support wildlife protection measures.

These findings are consistent with previous studies indicating that socio-economic characteristics significantly influence community participation in conservation programs (Brannlund et al., 2009; Pienarr, 2009). Thus, community-based conservation efforts should consider demographic variations to ensure effective engagement.

7. FINDINGS

The study highlights that socio-economic characteristics significantly shape community attitudes toward conservation in the Kamar Community Game Reserve (KCGR). Key findings include:

7.1 Age and Conservation Attitudes

Older respondents demonstrated more positive attitudes toward CGR conservation than younger individuals. This may stem from their year-round residency in the village and preference for a clean, green environment, while younger members often migrate to urban

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areas for work, reducing their engagement in local conservation activities. These results contrast with FAO (2003) but align with context-specific migration patterns in Pakistan.

7.2 Household Size and Resource Pressure

Larger households tended to exhibit stronger support for conservation efforts, possibly due to their capacity to mobilize more members for community initiatives. However, the growing population (3.24% annual growth) and increasing demand for food, fuelwood, and housing exert pressure on natural resources, contributing to habitat degradation.

7.3 Education and Awareness

Education emerged as a strong positive determinant of conservation attitudes. Literate respondents displayed greater awareness of environmental benefits and sustainable practices. This finding supports the notion that human capital, particularly education, enhances conservation participation, although some studies caution that formal education alone may not suffice without practical awareness programs.

7.4 Income and Economic Priorities

Higher household incomes were negatively correlated with conservation participation. Wealthier households were more engaged in business and non-farm income activities, prioritizing economic pursuits over conservation. In contrast, poorer households, while dependent on natural resources, expressed mixed attitudes—some viewed conservation as restrictive to their livelihoods.

7.5 Landholding Size and Conservation Resistance

Households with larger cultivated landholdings were less inclined to support conservation initiatives. Concerns about land-use restrictions and agricultural opportunities influenced their reluctance, echoing findings from similar studies in other regions. Land tenure security remains a critical factor for encouraging sustainable practices.

8. RECOMMENDATIONS

Based on the findings, the following recommendations are proposed:

1. **Enhance Environmental Education and Awareness**
   - Launch targeted awareness programs to promote understanding of conservation benefits and ecosystem services.
   - Integrate conservation topics into local school curricula and adult literacy programs.
2. **Promote Alternative Livelihoods**
   - Develop income-generating activities such as eco-tourism, handicrafts, and small-scale enterprises.
   - Support livestock improvement programs and drought-resilient agriculture to reduce dependence on forest resources.
3. **Strengthen Community Participation and Governance**
   - Empower Village Conservation Committees (VCCs) with greater decision-making authority and capacity-building.
   - Ensure equitable benefit-sharing from trophy hunting and tourism revenues to maintain community trust.
4. **Address Population Pressure and Resource Management**
   - Introduce community forestry and fuel-efficient stoves to reduce pressure on natural vegetation.
   - Implement land-use planning to prevent habitat fragmentation and maintain ecological corridors.

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5. **Adopt Incentive-Based Conservation Approaches**
   - Provide conditional cash transfers, conservation grants, or tax benefits for households engaging in conservation activities.
   - Explore Payment for Ecosystem Services (PES) schemes to reward sustainable practices.
6. **Policy Integration**
   - Align local conservation strategies with national biodiversity policies and Sustainable Development Goals (SDGs), particularly SDG 13 (Climate Action) and SDG 15 (Life on Land).

9. CONCLUSION

This research underscores the complex interplay between socio-economic determinants and community attitudes toward conservation in KCGR. Positive associations were found with age, education, and household size, while higher income and larger cultivated landholdings negatively influenced participation. These dynamics reveal that conservation strategies must be context-specific, addressing both livelihood needs and ecological priorities.

Effective community-based conservation requires integrating biodiversity protection with tangible socio-economic benefits. Awareness campaigns, education initiatives, and inclusive decision-making can foster stronger community engagement. Linking conservation to local development—through eco-tourism, regulated trophy hunting, and alternative livelihoods—can reduce dependency on natural resources and improve attitudes toward conservation.

Ultimately, sustainable conservation of community game reserves is achievable when local communities perceive clear economic and social benefits, and when policy frameworks adopt participatory, incentive-based approaches aligned with community realities.

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